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CONTRIBUTIONS
TO
PRACTICAL SURGERY.

BY

DANIEL AYRES. MD., LL.D.

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CONTRIBUTIONS

TO

Practical Surgery,

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BY

DANIEL AYRES, M.D., LL.D.,

MEMBER OF THE AMERICAN MEDICAL ASSOCIATION; OF THE NEW YORK PATHOLOGICAL SOCIETY; FELLOW OF THE ACADEMY OF MEDICINE, ETC.

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Dr AYRES' CASE OF DISLOCATION

ON STONE by SNYDER, BLACK & STURN N.Y.

APPEARANCE AFTER REDUCTION.

OF THE CERVICAL VERTEBRÆ.

DAGUERre BY WILLIAMSON

APPEARANCE BEFORE REDUCTION.

Contributions to Practical Surgery.

Case 1.—*Complete Dislocation of the Cervical Vertebræ—Reduction on the tenth day—Recovery.*

E. K., the subject of this accident, was a laboring man, thirty years of age, tall and muscular, but not fat, with a neck longer than the average among men of equal hight. On the evening of the 2nd of October he became intoxicated, was brought home insensible, and did not recover from the combined effects of the shock and his libations until the following morning, when he was supposed by his wife to be laboring under cold and a stiff neck. She made some domestic applications to the affected part, and administered a dose of cathartic medicine. When it was thought sufficient time had elapsed without obtaining relief, he was seen by Dr. Potter, of this city, and afterwards by Dr. Cullen, both of whom recognized a condition which was not only very unusual, but one which they had never before observed. I was then requested to examine the case, which I did on the ninth day after the accident. With some assistance and great personal effort, he was able to get out of bed, moving very slowly and cautiously. Desiring to expectorate, he was obliged to get down on his hands and knees, which he accomplished with the same deliberation. When seated in a chair, the head was thrown back and permanently fixed; the face turned upwards with an anxious expression. The anterior portion of the neck, bulging forwards, was strongly convex, rendering the larynx very prominent. The integu-

ments of this region were exceedingly tense and intolerant of pressure. The posterior portion of the neck exhibited a sharp, sudden angle at the junction of the fifth and sixth cervical vertebræ, around which the integuments laid in folds. It was difficult to reach the bottom of this angle even with strong pressure of the fingers, and of course the regular line formed by the projecting spinous processes was abruptly lost. He complained of intense and constant pain at this point, which was neither relieved nor aggravated by pressure. With difficulty he swallowed small quantities of liquid, pausing after each effort, and could not be induced to take solid food, since the first attempt to do so after the accident was followed by violent paroxysms of coughing and choking. His breathing was obstructed and somewhat labored, being unable fully to clear the bronchiæ of their secretion. This, however, seemed rather an effect of the tense condition of the soft parts of the neck, than the result of pressure upon the spinal cord, since he presented no evidence of paralysis, either of motion or sensation, in parts below the neck. The sterno-cleido-mastoid muscles of both sides were felt quite soft and relaxed.

But one conclusion could be formed upon this state of facts, to wit: that the oblique processes of both sides were completely dislocated. The marked rigidity of the head seemed to preclude the probability of fracture through the vertebral bodies, and although the cartilage might be separated anteriorly, yet, the body not pressing backwards sufficiently to produce paralysis of the cord, it was hoped that the posterior vertebral ligament remained uninjured; it was, therefore, determined to make an effort at reduction on the following day. In addition to those originally connected with the case, I am under obligations to Drs. Ingraham, Turner, Palmedo, G. D. Ayres, and a number of other medical gentlemen who were present by invitation, all of whom confirmed the diagnosis, and rendered efficient services:—

The patient was placed upon a strong table in a recumbent position, with a pillow resting under the shoulders, the

head being supported by the hand during the administration of chloroform, of which an ounce was given before anæsthesia ensued. Counter extension being made by two folded sheets placed obliquely across the shoulders and properly held, the head was grasped by one hand placed under the chin, the other over the occiput, and by steadily and firmly drawing the head directly backwards, and then upwards, an attempt was made at reduction, but failed for want of sufficient power. Dr. Ingraham was then requested to place his hands immediately over my own, in the same position as before, and steady traction was again made in the same direction. Our united strength was required in drawing the head backwards and upwards, to dislodge the superior oblique processes from their abnormal position. When this was felt to be yielding by Dr. Cullen, (who kept one hand constantly at the seat of dislocation,) Dr. Potter was directed to place his hands under our own, still in position, and assist in bringing the head forward; at the same time the chest was depressed towards the table. The bones were distinctly felt to slip into their places; the line of the spine was instantly restored, the head and neck assuming their natural position and aspect. As soon as the patient became conscious, he expressed himself ignorant of what had taken place, but free from pain, and, in his own language, "all right." A bandage was arranged to support the head and keep it bent forward. He had an anodyne for two nights following, after which no further treatment was necessary, and at the end of one week he had complete control over the movements of the head and neck. Beyond the debility and emaciation immediately dependent upon protracted fasting and loss of rest, he has experienced no uneasiness since the operation. His appetite is now good, and all the functions perform their duty normally. In a subsequent inquiry, to determine if possible the cause of the accident, he states that he distinctly recollects going into a store in Atlantic Street, near the ferry, and there having angry words with an acquaintance; that he left the store and was proceeding up the

street, (which is here a rather steep ascent,) when he was violently struck from behind, over the lower portion of the neck. He likewise remembers falling forward and striking against some object, but does not know what it was, nor what took place until the following morning.

Remarks.—All the vital functions, or those necessary to the support of life, are so immediately dependent upon the integrity of the spinal cord and its investing bony case, that any important injury to either of them commands special attention. Without entering upon the various diseases and injuries to which the spinal column may be subjected, it may be remarked that, in all of them, pressure sufficient to compress the cord, and thus cut off the line of communication with parts below, is the great result to be dreaded. The point at which pressure may occur is of vast moment, this being dangerous in proportion as it approximates the base of the skull. The rapidity with which compression is produced, also modifies the result. Like all other organs, the spinal cord exhibits the power of accommodating itself to great encroachments, if they are only made gradually: thus, one or more of the bodies of the vertebræ are slowly removed by caries or absorption, and the spinal column, with its contents, bent at an angle, and yet the parts below preserve their wonted integrity. Similar results often follow the slow effusions of inflammatory action, and by subsequent absorption complete paralysis may thus be removed. But such happy consequences are seldom met with when the disease is seated above the lower cervical vertebræ, because above this point the spinal cord gives off nerves which are absolutely essential to the maintenance of vital organs, and their temporary suspension is incompatible with life. These observations are especially applicable to fractures and dislocations of the vertebræ, for, whilst they are notoriously fatal, still partial or complete recoveries have followed very severe injuries when confined below the limits designated.

It was formerly maintained by Sir Astley Cooper, and

held by many eminent surgeons, that dislocations of the vertebræ could not take place without the simultaneous occurrence of fracture. These observations are sustained by general experience, in this respect, that where sufficient force is applied to cause the former, it will likewise, in the majority of instances, produce the latter. The exceptions to this rule, where the dislocation is complete, are very few in number; and in most of them death has either been immediate, or soon followed the accident.

Partial dislocation or displacement of the oblique process of one side, giving to the head a permanently twisted position towards one or the other shoulder, although rare, has been repeatedly recognized and reduced by European and American surgeons with various results. Such was the "fortunate case" of Dessault, quoted by Samuel Cooper; that of Guerin, of Paris, mentioned by South; and one by Druitt, which died in the attempt at reduction. Dupuytren, *(Clinical Lectures,)* after speaking of luxation of the atlas on the axis, as generally immediately fatal, and beyond all the resources of art, remarks, "The luxations of the other cervical vertebræ are generally confined to one of the articular processes, in which the head is carried to one side. The reduction of these luxations is very dangerous, and we have often known an individual perish from the compression or elongation of the spinal marrow which always attends these attempts. Petit Radel saw the case of a child who died during the manœuvres required by this reduction. Hence it is generally recommended to leave the case to itself." In the *Dictionnaire de Chirurgie* we find similar advice from Richerand, Boyer, and (maugre his success,) from Dessault also. These authorities, however, were strongly opposed by Seifert, in *Rust's Magazine*, Vol. XXXIV., and notwithstanding the unfortunate results which have occasionally attended efforts to correct this deformity, we look upon his conclusions as correct, and his directions worthy of imitation. Seifert directs that the patient should be placed sitting on the ground with the shoulders firmly held by an assistant.

The surgeon then grasps the head with one hand beneath the chin, and the other beneath the occiput, making extension, first in the direction of the dislocation, then in the longitudinal axis of the neck, and when this seems to have been sufficiently made, he twists the head strongly towards the dislocated side. My friend, Dr. James R. Wood, of New York, safely and completely reduced a partial luxation of this description in a child, by employing similar manipulations. After dislocation of the odontoid process, this is the form of accident to which most authors refer in speaking of luxations in the cervical region.

We would not, knowingly, do injustice to others, nor is it an easy task to exhaust the records of surgical literature; but after extended inquiry, both personal and through friends, we have been able to discover but one case definitely described as a complete dislocation successfully reduced. This is contained in *Chelins' Surgery*, by South, Vol. II., and prefaced by the following remark:—"Hitherto, this dislocation has been only known on one side, as a consequence of external violence, or strong twisting of the muscles." He then proceeds to describe the case of Walther, as detailed in his *Journal of Surgery*, Vol. III. Pt. I., page 197, which we shall refer to again, as it was from this case alone that we received confirmation of our diagnosis, and ventured to attempt the reduction. With this exception, the manner in which the subject is considered by standard authors on practical surgery, is indicative of great doubt as to its possible occurrence without destroying life; and, with reference to its treatment, the most general allusion only is made. Thus, Professor Miller says, "Luxations of the spine, without fracture of the processes, is a very rare injury, yet has occurred occasionally in the cervical region, ordinarily between the fifth and sixth vertebræ. It has happened by muscular power alone; a maniac, for example, having so caused death by, as it were, forcibly throwing the head from him during restraint in a paroxysm of excitement. More frequently, it is the result of violence applied from without. If life or the hope of life remain,

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replacement is to be effected by careful extension and coaptation."

Professor Fergusson observes, "Dislocations in this region are few, and of rare occurrence. The cervical vertebræ are occasionally displaced, either as the result of accident or disease. When the former happens, it is customary to suppose that the spinal marrow is so affected that immediate death is the result, especially if the injury is above the origin of the phrenic nerve. I have not myself seen any case of this kind, but I believe there are few in the profession who doubt the truth of the current doctrine."

Professor Samuel Cooper treats the subject more minutely, and states that, "In the upper part of the vertebral column there may be dislocation of the vertebræ, unaccompanied with fracture, because the articular surfaces of the bodies are less extensive, and the spinous and articular processes less oblique. At St. Bartholomew's Hospital there is a preparation in which there is a portion of the intervertebral substance lacerated between the fifth and the sixth cervical vertebræ accompanied with dislocation of the articular processes. By the favor of a gentleman who was attending my lectures, I was once enabled to show the surgical class of University College a specimen of complete dislocation of the middle of the cervical vertebræ without fracture. The person from whom it was taken was killed instantaneously by coming in contact with the top of a gateway as he was sitting upon an omnibus which was going at great speed." He also adds, "If we are to believe the statement of Dessault and others, dislocations of the articular processes of certain portions of the spine have been occasionally reduced." This sentence is rendered more definite by a subsequent paragraph, viz., "As dislocations of the atlas from the second vertebræ may be set down as inevitably fatal, it is unnecessary to say anything about their treatment. We do hear, it is true, of dislocations of the head being rectified, but these are not the cases under consideration, but merely examples of displacement of *one of the articular processes of the cervical vertebræ*," etc.

Mr. Liston observes, "True dislocation of the spine from the rupture of ligaments and fibro-cartilage is a very rare accident; few cases of it are on record, and in them the injury was in the cervical vertebræ. I have only met with two instances." One of these is stated to have been fatal, and a cut exhibiting the injury given. Nothing is said of the other case, but had it survived, it is probable that Mr. Liston would have noticed the fact. He recognizes "the occasional luxation" above mentioned, but gives neither cases nor treatment.

Dr. Norris, of Philadelphia, in the *American Journal of Medical Science*, Vol. I., New Series, 1841, carefully describes a complete luxation of the fifth cervical vertebræ forward upon the sixth without fracture, resulting from a fall upon the head. In this case, the head bent forward on the chest unless supported; there was paralysis, and death occurred on the third day.

We might multiply authorities to the same purport, many, however, are exceedingly vague, and some evidently writing without observation, actually mislead the diagnosis. Thus it is stated that, if the dislocation occur in the neck, there will necessarily be paralysis to a greater or less extent of the parts below.

The case of Walther, previously alluded to, accords perfectly in all its symptoms with that which we have described; yet in neither instance was there paralysis, unless the impediment to respiration and deglutition may be attributed to partial pressure upon the cord. A few anatomical facts may assist our appreciation of this accident. In the cervical vertebræ the anterior portion of the fibro-cartilages is thicker than the posterior, and its flexibility permits a certain amount of extension without rupture. The posterior vertebral ligaments which connect the bodies posteriorly, and separate them from the anterior surface of the spinal cord, are broad and very strong in this region, so that they are capable of protecting that delicate organ even though the fibro-cartilage should separate at its anterior portion from the correspond-

ing vertebral body. It should likewise be remembered, that the cord occupies only two-thirds of the spinal canal, so that there is no difficulty in comprehending that, if the violence applied is not too great, and other circumstances are favorable, a complete dislocation may take place without the induction of sufficient pressure to produce dangerous paralysis, provided that this is not continued for too great a period. The value of Walther's case to us prompted the effort to make this also available to the profession; and our design has been truthfully assisted by the artist whose anatomical knowledge was essential to success. In discussing the treatment, it must not be forgotten that this was not a question of deformity alone, for death by starvation was inevitable, even had he escaped the consecutive damage which would probably have ensued upon the spinal cord. The attempt was therefore justifiable, whatever might have been the result. Again, as to the degree of force which should be used, I know of no rule but to employ sufficient to produce the effect; and as we had no adequate conception, *a priori*, of the amount that would be requisite to insure reduction in this case, every precaution was taken that it should be gradual, steady, in the right direction, and only limited by the effect.

Case 2.—Gun-shot Wound of the Shoulder—Two and a half inches of the Clavicle Removed—Reproduction and complete Recovery.

The wonderful effects of the mind upon the results of injuries and operations, frequently forces itself upon the notice of surgeons. A buoyant, hopeful, cheerful, courageous disposition often seems to foreshadow and institute success; whilst a foreboding, desponding, gloomy, and timorous state of mind, will often blast the most favorable conditions, and thwart the best efforts of art. Nor is this to be supposed a transposition of cause for effect. The instances in which both sudden and gradual death have been produced through the direct agency of mental action are too numerous and well-attested to admit of doubt; and it is far from illogical

to infer the reverse to be true. In fact, our daily practice of giving cheerful and hopeful encouragement recognizes the value of this therapeutic agency. In the following case, this favorable condition of mind formed an important controlling element.

A. K., a short, stout man, of naturally excellent constitution, hardened by activity of life, and remarkable simplicity of habits, was sixty-two years of age at the time of this accident, and yet exhibited all the vivacity and endurance of youth. Whilst engaged at work, some two miles from the city, he was met by an acquaintance who was out shooting, and they became enthusiastic in a disputation on theological subjects, for which the old man had a remarkable predilection, and was always prepared. Proving himself too powerful for the young man, and withal becoming rather personal in his discourse, the latter pointed his gun at his antagonist, by way of intimidation. This was heavily loaded with No. 6 shot, and, being out of repair, suddenly exploded. The unfortunate man was standing in an oblique position, within half a yard of the muzzle. The whole charge, including the wadding, entered his body near the sternal end of the right clavicle, forming a large, ragged wound, extending to within half an inch of the acromion process, and shattering the bone into several large and numerous small fragments. The muscles and fasciæ attached to this bone were so torn up, that the subclavian vein and brachial plexus were visible, and the subclavian artery felt pulsating at the bottom of the wound. The charge passed towards the right shoulder; after tearing both pectoral muscles, perforating the coraco-brachialis and deltoid, it emerged from the lateral upper third of the arm, forming there a ragged wound an inch in diameter. He lost a large quantity of blood on the ground and during his removal to his home—sufficient to induce syncopy; and he had taken several ounces of brandy. I saw him at one o'clock, (Sept. 23,) two hours after the accident; he had rallied, and spoke with great spirit and courage; pulse at the right wrist could be felt, although feebly. On carefully

removing the dressings which had been hastily applied, and clearing away the coagula, two arteries at the root of the neck bled quite freely, and were ligatured. After removing as much of the shattered bone as could be done with safety, the lips of the wound were approximated with adhesive straps, and covered with lint retained by moderate pressure. The right arm being supported in the bent position, and firmly confined to the side, the patient was placed in bed, with the head elevated. Emphysematous crepitation was now perceptible over the whole right shoulder, and this was so considerable, that it was supposed the pleura had been punctured by one or more shot, but if so, the opening must have quickly closed, for in a few days this emphysema entirely subsided.

He was ordered small lumps of ice to allay thirst and nausea which was present, and perfect quietude enjoined. Complete reaction was established in the evening; pulse 80; free venous oozing from the wound, to suppress which, additional lint and pressure were applied.

September 24.—Hæmorrhage ceased entirely; pulse 100; skin soft; slept a little towards morning; has some pain in the wound, and an erethematous blush is perceptible around it. Ord.—majend. sol. morph., 15 drops, and gruel for diet.

September 25.—Has passed an excellent night, and feels remarkably well. Dressings firm and undisturbed; pulse 80; his bowels were moved with a dose of magnesia, and he progressed favorably, until

September 29.—Complained of severe pain in the right hypochondrium, which was mitigated after two natural alvine discharges, but returned with increased severity in the evening. He was directed to take one ounce of castor oil, with a carminative.

September 30.—Oil operated, but has afforded only partial relief; the abdomen is tympanitic; tongue furred; urine turbid; skin hot; pulse 100; the countenance flushed and anxious. The dressings over the clavicle are bathed in pus; slough begins to separate at its edges, and covers the whole

tract of the clavicular wound. A large cellular slough is being thrown off from the arm, to which warm water dressing is applied, covered with oil silk. Ordered to take gr. x. hydrarg. sub. mur., to be followed with saline mixture. It was apprehended, at this stage of the case, that serious, if not fatal, hæmorrhage might occur at any moment. He was, therefore, most critically watched, and ample means prepared to apply immediate pressure.

October 1.—The cathartic produced several copious and black discharges, with great relief to all his constitutional symptoms, and his general condition is vastly better.

October 10.—Patient continues to do well; slough came away from the arm to-day, with a portion of wadding and a large quantity of shot, followed by a copious, purulent discharge, of laudable character. Allowed beef and chicken broths, but thick oat-meal gruel is his staple diet by preference.

October 15.—Slough from main wound removed with dressings, disclosing the whole surface covered with granulations, which are observed to rise and fall synchronously with the vessels below. The sternal end of the clavicle, dry and black, will probably necrose; distance between the fragments, two inches by measurement. The wound was gently drawn together by adhesive straps, diminishing the open gap to one inch and three-quarters; this interval, protected by lint, spread with Turner's cerate, and gentle pressure over all. This is more readily accomplished and less frequently disturbed since the slough has separated from the wound on the arm; the sub-cutaneous channel thus formed acting as a drain for the upper and more important wound.

October 25.—Patient has progressed favorably, and wounds are granulating slowly, but suppuration is very profuse, and with great difficulty his clothing and bedding are kept in a decent condition. This annoyance was principally felt in the constant change of dressings necessary to support the arm and shoulder. This consisted of a well-padded ring passed over the opposite shoulder, to which slings and ban-

dages were adjusted; these, however, were finally discontinued, and sole reliance made upon position and support by properly arranged cushions. The patient continues in excellent spirits, although considerably reduced—his appetite is fair, and he is liberally supplied with nourishment. Is taking quinine and from one to two pints of ale per day.

November 15.—The necrosed portion of clavicle separated to-day; the wound is gradually closing, and discharge diminishing. From this period onward my notes exhibit progressive improvement. He was allowed to sit up towards the latter part of November, but the wounds about the shoulder were not healed until January. Between that period and the following April, a number of abscesses formed about the upper portion of the chest, discharging shot; he had collected over a hundred evacuated in this manner.

The fragments of clavicle removed and preserved, when carefully adjusted, confirms the statement, that two and a-half inches, or more than one-third, of this bone was destroyed; and yet, at the end of one year from the time of accident, he exhibits a shoulder perfectly symmetrical with its fellow, without drooping or falling forward. The cicatrices are hard and firmly consolidated with the parts below. He is gradually regaining the use of his arm, although its field of motion is contracted by the imperfect action of some of the injured muscles, particularly the deltoid.

Remarks.—In reviewing the facts of this case, it is hardly necessary to add, that the advanced age of the subject, the extent of injury, its close contiguity to parts of vital importance, the reproduction of so considerable an amount of bone, the long sustained exhaustive discharges, and final complete recovery, form a combination of circumstances rarely to be expected, and still less frequently seen.

Case 3.—*Varicose Tumor of the Stomach, causing Fatal Hæmorrhage.*

Hæmorrhage from the stomach is an occasional attendant upon uterine disorders, and of very frequent occur-

rence in connection with organic diseases of the liver and chilopoietic viscera. The investigations of pathologists upon this point have led them to conclude, that it takes place as a transudation through the tissues of the minute vessels, without actual lesion or rupture of their coats. This view coincides with the facts and symptoms as they usually take place, and is, undoubtedly, correct as a general rule. But there are exceptions to it, and the following case not only illustrates this, but likewise the occasional difficulty of distinguishing aneurism of this region.

J. M., 30 years of age; native of Germany; married; of active temperament; never intemperate, but accustomed to the moderate use of malt liquors. He had never resided in a malarious district, nor suffered from fever; was complaining more or less for four years and under the care of Dr. Palmedo, but always able to attend to business, with rare intervals of a few days. His usual symptoms were those of dyspepsia, with constant oppression at the epigastrium, often amounting to intense pain. Bowels habitually torpid, and, occasionally, obstinately constipated. The abdomen was frequently distended with flatus, and always prominent at its superior portion. A deep-seated tumor early began to be perceptible below the left inferior ribs, and gradually increased until it filled the left hypochondrium. It emitted a dull sound on percussion—and always pulsated strongly. He had an attack of ascites, with general anasarca, a year before his death, which yielded to cathartics and diuretics, without returning. Emaciation very trifling until within the last four months of his life, but his general appearance was sallow and unhealthy. Two days before death, he commenced vomiting blood in large quantities and slightly coagulated; similar discharges took place by the bowels. Although temporarily restrained by ice, acids, and astringents, with opium, he suddenly expired after vomiting a large wash-basin full of coagula. The patient was supposed to be laboring under aneurism of the abdominal aorta, and the mode of termination seemed to confirm this diagnosis;

its enormous size and encroachment on neighboring organs would rationally account for their disturbance.

Post-mortem appearances.—Strong cadaveric rigidity; surface pale; very little sub-cutaneous fat; intestines contained coagula; liver small, firm, and far advanced in cirrhosis; spleen occupies the whole epigastric and left hypochondriac region; ovoid in shape; by measurement, eleven inches long, ten inches broad, and five inches thick; surface of grayish red color, shriveled and corrugated; substance pultaceous and free from fibrinous deposits; splenic and gastric veins very much enlarged and tortuous. The stomach, filled with coagula, was removed for special examination. This organ was opened carefully along its lesser curvature and supported upon a frame. The principal gastric vein, measuring half an inch in diameter, was connected with a short tube, into which water was allowed to descend by its own weight. After running a tortuous course for two inches, it opened into a cavity as large as an English walnut, from which smaller veins diverged in various directions over the whole organ. The cavity thus distended formed a tumor presenting upon the mucous surface, and about its centre a ragged opening, one line in extent, was made visible by the stream of water pouring from it, thus indicating the source of hæmorrhage. The tissues about this orifice were so tender, that with great difficulty it could be pinched up and ligated sufficiently firm to retain the permanent injection of plaster of Paris. In the vicinity of these veins, all the tissues of the stomach appear to have degenerated, and the cells loaded with fatty deposit.

Case 4.—Imperforate Anus—Descending Colon terminating in the Bladder—Operation through the Perineum—Subsequently AMUSSAT'S *Operation for Artificial Anus.*

Malformation at the lower portion of the bowels are found in various degrees, from the simple film of cuticle stretched across the anal opening, up to the complete absence of any vestige of a rectum. The proceeding of

the surgeon must be guided by the peculiarities of each case, and modified according to the distance of the occluded intestine from the perineum. Where this is short, simple incision and subsequent dilatation is sufficient. When this fails, or the distance is too great after reaching the intestine, it may be separated from its lateral connections, brought down to the inferior outlet, and made fast to the integuments by points of suture. In many of these cases, the operation is necessarily exploratory, and although success may not always crown our efforts to remedy a radical defect of nature, still surgery is often a valuable palliative, as well as conservative art; and upon this ground alone, I felt myself justified in the treatment of the following case.

I was requested by Dr. Osborn, formerly of this city, to see a male child, five days old, and received the following history: The child was born at full time; of healthy parents; appeared well developed; nursed and slept well until the third day when it became restless, and cried much. On inquiry, finding that the bowels had not been moved satisfactorily, he ordered a mild laxative. It gradually became worse when vomiting set in, succeeded by hiccough and violent straining. The doctor then instituted a careful examination and found the anus closed; this oversight is chargeable to the unintentional misrepresentation of the mother, as was proved by subsequent events. Finding the natural cleft of the nates with its central *raphè*, but no indications of an opening, I commenced an exploratory incision where it should be found, and had advanced so far as to feel the promontory of the sacrum, but could detect no impulse, although the child was crying lustily and straining forcibly. The sound of air escaping led us for a moment to think that the intestine was opened; but failing to find it, after careful searching, I was about to abandon the operation, when my attention was drawn to the penis. The prepuce was inflamed and slightly swollen; uncovering the glands, a dark matter was observed issuing from the meatus, although the child had passed a large amount of clear urine

just before the operation. It was concluded that the intestine either terminated in, or was connected with, the upper portion of the bladder; thus accounting for the sound of escaping air. This was confirmed by the mother, now, for the first time, exhibiting some cloths marked by fæculent stains; here, then, was the source of her mistake. A small grooved staff, introduced through the meatus and freely entering the bladder, was firmly pressed towards the perineum. I cut down upon it as far back as possible, and reaching the groove, passed the scalpel into the bladder, and brought it out at the first exploratory opening, thus throwing both wounds into one. A large quantity of fæcal matter was instantly discharged, with apparently great relief to the child, for it went to sleep shortly afterwards. The hæmorrhage was not troublesome, and ceased on introducing a piece of sponge. This was retained for four hours and then expelled with a still larger excrementitious evacuation. The operation was performed on the 20th of January, after which the child passed a tranquil night, with complete subsidence of all its previously distressing symptoms, and nursed freely. A roll of linen, well oiled, was directed to be retained in the posterior portion of the wound.

January 25.—Patient has continued to have several natural alvine discharges daily since the operation, all of which pass by the artificial opening, whilst the greater portion of its urine is evacuated quite clear by the meatus; occasionally a portion of it passes in the other direction.

February 15.—The child's health is good, with no return of unpleasant symptoms. The perineal wound is still suppurating and apparently contracting, notwithstanding large bougies are directed to be used several times a day.

March 1.—The opening was so much contracted that it was enlarged with a bistourie, and dilatation ordered more regularly, after which the child improved again rapidly. Partly through fear of doing harm, partly through negligence, but probably, most of all from the strong tendency of all such wounds to close, I found my little patient, on the

1st of June, almost as bad as at my first visit; a probe would scarcely pass by the artificial opening; it had become languid, nursed but little, and was loosing flesh. The abdomen had become enormously distended, and covered with tortuous veins. Its evacuations were again forced through the urethra in paroxysms of agonizing suffering, and its piercing shrieks, heard by those residing in the neighborhood, excited the deepest sympathy. At the urgent solicitation of the mother, which was hardly necessary to enforce the more direct appeals of intense suffering, I determined to establish an artificial anus in the left lumbar region, which was accomplished without difficulty, adopting the method of Amussat. The immediate result was the discharge of an immense accumulation of gas and hardened fæces, with speedy subsidence of the abdominal distension, and relief from pain. On the following day prolapsus of the colon took place to the extent of ten inches, which was readily replaced, and retained by compress and bandage. After the sutures were removed, and the tissues became firm, no farther difficulty was encountered. The relief from suffering and improved nutrition soon became apparent in the augmentation of flesh and strength. At this time I lost sight of my little patient, and was subsequently informed that it continued to improve until the month of August, during which the weather was very hot. Difficult dentition ensued, with its train of exhausting symptoms greatly aggravated by the loss of its mother's milk, and it perished at last through cholera infantum.

Case 5.—Comminuted Fracture of the Humerus, complicated with injury of nerves, vessels, and muscles—Great displacement of fragments—Operation—Recovery.

In many cases of severe injury of the extremities, "the question of amputation," as it is termed, becomes one of great difficulty; and no problem in surgery demands broader experience, and more mature judgment, than that which proposes to carry conservatism to the extreme limits consistent with the preservation of life. With youth and a

vigorous constitution, nature sometimes accomplishes results which challenge our unbounded admiration. The due appreciation and measurement of these powers, timely and judiciously assisted by the resources of art, has furnished the most beneficent achievements of modern surgery.

From among many instances illustrative of this recuperative power, and falling under my own observation, the following case may lead us not to despair under the most desperate circumstances, where the upper extremity is involved.

A fine young lad, 15 years of age, who was the only hope of an aged relative, desirous of contributing to their mutual support, obtained work at a large rope manufactory in this city. He was employed in supplying one of the machines with hemp, which required him to pass and re-pass beside a large band-wheel carrying the main belt which set the machinery in motion. Whilst thus engaged in transporting a double armful of loose hemp, he failed to observe this belt, and, coming in contact, was instantly caught up by the left arm, and carried over the wheel with sufficient force to throw his boots from his feet across the room. This obstruction threw the machinery out of geer, and he was extricated from his position as soon as the workmen could cut away the long strands of hemp which were so completely matted around his head and chest as to stop respiration. This caused some delay, and doubtless contributed, along with the contusion of the parts, to produce the severe congestion of the lungs which afterwards ensued. The whole left side of the chest appeared to be compressed and flattened; the shoulder and scapular region, in addition to contusion, exhibited several lacerated wounds, which were deep and bled freely. The left arm was found broken at its middle third, completely twisted upon its axis, and flattened to the thickness of the hand, with no pulsation nor sensation in the parts below. In this condition he was found, and attended by Drs. Otterson and G. D. Ayres.

On the following morning, I discovered, upon examination, the humerus comminuted, and the superior and inferior frag-

ments widely separated; the former, driven through the triceps, was presenting a sharp point underneath the integuments, whilst the latter was so entangled in the muscles occupying the front of the arm, and the whole so swollen and infiltrated, that it was impossible to make out its exact position. It was deemed imprudent in his present condition to attempt further coaptation; in fact, this was out of the question without exposing the bones. The pulse was not perceptible in the wrist of the injured extremity until the following day, and then very feebly; its temperature much lower than the opposite; color dusky, with total absence of sensation and motion. The arm was, therefore, placed in a fracture box, and every attention given to the internal injuries, which for a time threatened to prove fatal. There was severe constitutional irritation, manifested by extreme restlessness and rapid pulse; intense pain in the thorax; dyspnœa; and copious bloody expectoration. These symptoms were met by large anodynes, mercurials, and aperients.

After the lapse of nine days, the chest symptoms yielded, and his general condition became much more hopeful. The circulation in the injured extremity had improved, but was still weaker than in its fellow, and no indication of returning sensation. The arm swollen and œdematous; integuments over the upper fragment inflamed and about to ulcerate. For the last twelve hours he has complained of more pain in the arm than during the whole period since the accident; it was, therefore, decided to make an exploratory operation, and then amputate, if necessary.

With this view, after being placed fully under the influence of chloroform, a liberal incision was made over the upper fragment, dividing the fibres of the triceps so as to free it completely, and permit the application of the saw. An inch of its sharp extremity being removed, the knife was again made to divide the fascia and muscles situated below it. By this proceeding, access was gained to a cavity filled with coagula and bony spiculæ; the muscular tissue was found extensively lacerated, and the natural relation of parts

thereby confused. The lower fragment was finally extracted from the sheath of the biceps, through which it had been driven into the body of that muscle. The principal nerves of the arm were known to be seriously injured, if not divided; their contiguity to the brachial artery and its impaired circulation rendered it probable that this also was lacerated; it was, therefore, a source of great anxiety, and complicated the manipulations necessary to bring the broken fragments into position. But, after the wound was sponged with cold water, the hæmorrhage ceased, and it was now determined to give nature a chance. The parts were coaptated; the wound closed with isinglass plaster; the arm bent at an easy angle placed in splints of strong iron wire gauze, so arranged as not to impede the circulation. Anodynes were necessary for a few days, and the case progressed to a favorable termination. It is unnecessary to detail the minutiæ of the after treatment; the wound suppurated freely, and discharged several considerable portions of bone, the granulations at times becoming very exuberant; this process was greatly facilitated by the occasional application of the acid nit. hydrarg. Generous diet was early employed, and constant attention required to prevent undue pressure at any point, which, owing to nervous impairment, was quickly prone to inflame and slough.

At the end of twelve weeks, the bones were firmly consolidated, and, passive motion having been previously employed, all dressing was removed, and use of the limb encouraged. Six months after the accident, he resumed his business; and now, after the lapse of a year, he has a limb daily improving in usefulness; the sensation is still imperfect, and it requires protection from cold; he can flex the forearm and hand strongly, but the extensor muscles are yet very feeble; he can carry a heavy chair or a pail of water when it is once in his grasp.

Conclusions.—From the length of time during which the circulation was absent from the wrist—its slow return and marked feebleness—the continued diminished temperature;

the immediate proximity of the main artery to the comminuted bone and severed nerves—the severe stretching and compression which inevitably took place at the time of injury—and, above all, being unable to detect pulsation immediately above the bend of the arm, even at this date, I am forced to conclude that the brachial artery was obliterated at the seat of injury, and the circulation carried on through the inosculating branches. If there is any condition in which gangrene of the upper extremity could be anticipated as the result of injury, it certainly was in this; at the same time, I wish to guard against any invidious application of it to the rules of surgical practice—by stating my opinion, that the case is an extreme one, yielding unexpected results, and as such it is presented.

Case 6.—*Adipose Tumor of the Thigh, involving the Saphena Veins—Removal—Phlebitis—Recovery.*

Among the numerous forms of tumor brought under the observation of surgeons, the adipose or fatty variety is most frequently the subject of operation. These, although they may attain enormous dimensions, are generally so situated as to be easily and safely removed. It is only when they involve important parts, and encroach upon deep-seated structures, that they become subjects of special interest.

E. B. C. was about 38 years of age; stout and robust habit; accustomed to a very active life and much exercise on horseback; enjoying excellent health up to the time of operation.

Several years previous, he noticed a tumor growing upon the inside of the left thigh, at the junction of its upper and middle third. This has gradually increased until it measures ten inches in length; is ovoid in shape, and slightly flattened; the circumference of the thigh being twice that of the opposite one. It presented all the characteristics of adipose tumor; the integuments quite movable over it, but when seized firmly and elevated, it seemed intimately connected with the parts beneath. The limb was cumbersome from

its increased burden, and imparted a straddling gait in walking. The veins of the foot, leg, and thigh are enormously enlarged and varicose, having long required the use of a bandage, and frequently productive of great pain after prolonged exercise.

After some preparatory treatment, the tumor was approached by a straight incision, parallel with and reaching nearly the length of the thigh, and without difficulty enucleated from its superficial and lateral connections; but, posteriorly, it was so firmly attached as to require the knife in order to bring these relations into view. This large mass being removed, was found connected by an isthmus with a second, about half its size, the capsule of which was lost in the fascia lata. Through this all the branches of the great saphena vein were found to run, emerging in a large trunk above; this was, therefore, divided and held aside while the remainder of the tumor was rapidly dissected from the muscles beneath. The hæmorrhage from the vein was so copious, that a ligature was absolutely necessary to restrain it. Several arteries, very much enlarged, had been secured at the time of division; the wound was cleansed, its flaps brought together by one point of suture, and strips of isinglass plaster; a bandage from the toes up, supported compresses placed over the flaps, and leaving the line of incision free. Perfect rest in bed enjoined, and the limb elevated.

On the following morning, he appeared to be doing well, although his sleep had not been good, which was attributed to the excitement. At the end of forty-eight hours from the operation, he was seized with violent rigors, followed by fever and severe headache, with pain in the back and limbs; frequent pulse; furred tongue; constant nausea and thirst; the left groin tender and a little swollen, but no pain referred to the wound.

Knowing that a loaded state of the colon at the time of surgical operations, necessarily sudden in their performance, would give rise to just such symptoms, it had been anticipated by low diet and cathartics; suppurative inflammation

of the veins was, therefore, to be suspected. He was ordered ten grains of Dover's powder, with an equal quantity of the sub. mur. hydrar., to be followed by a saline draught. Copious discharges of a watery character took place four hours after taking the latter medicine, but with no improvement of symptoms. Bilious vomiting ensued; the skin became sallow, and, finally, deeply jaundiced; pulse frequent and jerking; tongue dry and brown, and some delirium; urine scanty. His chief complaint is of great prostration and thirst.

Directed, iced sparkling cider, and small lumps of ice to be given *ad libitum*, and the following powder to be administered every three hours.

℞. Hyd. sub. mur., gr. ji.
Sulph. quinine, gr. v.
Pulv. G. opii., gr. ss. M.

The plasters were removed from the wound, being raised with the cuticle along their whole tract by vesications, filled with a deeply yellow serum; wound gaping at its upper portion, and discharging thin greenish serum. Ordered it to be covered with warm water dressings and oil silk.

During the three succeeding days, the patient manifested no improvement, but, in addition to the previous symptoms, were added irregular chills and profuse perspirations, followed by great restlessness and exhaustion; pulse varying from 120 to 130, and at times very feeble. The same line of treatment was pursued, with the addition of aromatic spirits of ammonia and chloric ether, occasionally.

On the seventh day from the operation, copious discharges of pus took place from the upper portion of the wound, simultaneous with an increased renal secretion, heavily loaded with a ropy sediment, and of highly offensive odor; with it the frequency of pulse began to subside, and all his alarming symptoms gradually abated. This peculiar discharge continued for several weeks, but at no time so copious as

during the first twelve hours after its appearance. He was allowed strong broth, with a moderate quantity of solid food and fruit, and continued the use of tonics. The wound healed slowly but kindly—at the end of six weeks he was permitted to go into the country, and a long elastic wove stocking, extending nearly to the groin, was directed to be worn upon the limb during the day-time. Under change of air, he rapidly regained his health, and the limb has regained its normal condition.

Remarks.—The salient point of interest in this case is the manner in which resolution of the fearful symptoms of phlebitis took place. The same form of medication, and, indeed, every form, has so frequently proved unavailing when the symptoms of pyæmia supervene upon surgical operations, that it is justly regarded as one of the terrors of the art. It is a question, therefore, whether the present result should not be viewed rather as one of those beautiful and beneficent natural provisions, by which a vicarious office is temporarily performed by one of the great eliminating emunctories of the system. I was strongly inclined to adopt this explanation of the phenomena at the time of their occurrence, and have since received additional confirmation of this opinion, from the conclusion of a case occurring in the practice of my friend, Dr. S. S. Purple, of New York, to which he has kindly permitted me to refer. The patient was 34 years old, and had been suffering for some time with all the rational and physical indications of empyema occupying the left pleural cavity, with bulging of the intercostal spaces, and indications of pointing below the scapula. In his failing condition, paracentesis of the thorax was strongly urged by his physicians, but pertinaciously rejected, "the alternative of death being preferred." Suddenly and unexpectedly, his urine became copious, and loaded with a thick, ropy, and highly offensive sediment, which continued for some time, followed by an improvement in his symptoms and general condition. The patient ultimately recovered, and is now well.

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